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REPORT

OF A

GEOLOGICAL EXAMINATION,

MADE ON

CERTAIN LANDS AND MINES

IN THE COUNTIES OF

HAYWOOD, MADISON, BUNCOMBE, JACKSON AND MACON, N. C.,
AND IN COCKE COUNTY, TENNESSEE.



BY RICHARD OWEN, M. D.,

*Professor of Natural Science, Indiana State University; Author of "Key to the
Geology of the Globe," and late State Geologist of Indiana.*

INDIANAPOLIS:

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NEW HARMONY, IND., September 4, 1867.

Col. J. G. Eve, Barbourville, Ky. :

DEAR SIR: Subjoined you will find the report of the mines and lands which I examined at your request and in your company, partly situated in East Tennessee, but chiefly in the counties of Haywood, Madison, Buncombe, Jackson and Macon in the State of North Carolina. As I understood your wish, and that of the other parties interested, to be that I should give not only the ascertained facts regarding the minerals and mining advantages of those regions, but also the agricultural and commercial facilities, I have endeavored to embody all those points in my report, giving, first, general observations, and afterwards detailed facts. I have addressed the report to you, as you accompanied me, and are more or less interested in all the tracts described. Allow me, in this connection, to acknowledge my heartfelt appreciation of the energetic and kind courtesy which you brought to bear for the purpose of furnishing means and facilities in the prosecution of the exploration, as well as my grateful remembrance of the uniform hospitality and warm-hearted kindness with which (although known to be a Northern man and Federal officer during the war), I was invariably treated by the citizens of Kentucky, East Tennessee and North Carolina. Through this medium I rejoice, publicly, to record my warm obligations for such disinterestedness, the instances of which were too numerous for individual mention, and might, possibly, if specified by giving the names of our hospital entertainers, appear to violate the sanctity of private life.

Respectfully and truly, yours,

RICHARD OWEN.

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REPORT.

PRELIMINARY REMARKS.

Although I hope and believe that the statement of facts in this, as in all my reports, would be entirely unbiased, whether I did or did not possess a pecuniary interest in the mines and lands reported upon, still it may add to the confidence entertained by the public to be assured that I have at present no share in these enterprises, although I have sufficient confidence in their success to be willing to invest to a considerable amount.

Different regions reported upon are in the disposal of several separate and distinct companies, being sometimes held only by lease for mining purposes, but being more generally held in fee simple. In some cases mining operations have been carried on to a considerable extent, but in others, while the mineral prospects are by no means overlooked, the chief inducements are rather the cheapness of land and fine agricultural advantages offered in the settlement of alternate tracts at very low rates; the dependence for profit being rather, as I understand, in the prospective advance in the value of the alternate lands retained, while, at the same time, the value is enhanced of those tracts thus actually settled. An inspection of the details will furnish data on these subjects to such as may wish to settle in these alternate regions; but, to save repetition, I propose to give in advance of details some general information which is, in a great measure, applicable to all the lands held in fee simple in the above named counties of North Carolina, especially Macon, Jackson and Haywood. The mines and lands leased are chiefly in Cocke county, Tennessee, and in Haywood and Buncombe counties, North Carolina.

I shall speak, therefore, I. Of the Physical Geography, General Geology and Mining prospects. II. Of the Agricultural advantages. III. Of the facilities, both present and prospective, for bringing the surplus products of those regions into market by railroads, turnpikes, &c. IV. Of the health, climate, water, timber, water privileges and miscellaneous characteristics of those

regions. V. The details: 1. Of property on Blue Ridge, Whitesides and Black Hawk mountains, owned by Messrs. Jennings, Ammon & Co., and by Messrs. A. L. & A. J. Herren & Co. 2. Of lands held by Messrs. A. L. & A. J. Herren & Co., chiefly on Standing Indian, Nantehala and Alarka. 3. Of the Maddron and Wilkins Creek, &c., mines in Haywood county. 4. Of miscellaneous tracts. VI. Lastly, a summary or synopsis of the conclusions arrived at.

In accordance with the above arrangement, I take up

I. PHYSICAL GEOGRAPHY, GENERAL GEOLOGY AND MINING PROSPECTS.

An inspection of a good map will show that the region under examination forms part of the great Appalachian System, which tends *generally* in a northeast and southwest direction, in ridges parallel to the Atlantic coast, with subordinate spurs. The valleys between the ridges are valleys of elevation; thus, for instance, the valley in Tennessee, east of the Cumberland Gap, is more than two hundred feet higher than the valley west of the "Gap" in Kentucky; so, too, the plateaus west of the Blue Ridge are extensive table lands, several hundred feet higher than the adjoining valleys in South Carolina and Georgia. In and near Smoky Ridge I found some passes about four thousand feet above the ocean; and the plain of Waynesville, the county seat of Haywood, is about three thousand seven hundred and fifty feet above high tide. Many of the valleys are the result of denudation; but the summits of the ridges are supposed to have raised themselves above the ocean at an early period of the earth's history, although the last evidences of disturbance in the Appalachian chain must have been as late as the close of the Paleozoic Period, the carboniferous strata having been raised to a considerable angle, when the central upheaval of gneissoid rocks threw some metamorphic strata almost into a vertical position, and so altered parts of the limestone that, in proximity of the crystalline rocks, it strikes fire with steel, yet a few miles from there burns into excellent lime.

From the report of Prof. Safford, State Geologist of Tennessee, the general geological features of Cocke county are seen to comprise crystalline rocks with some metamorphic, a geological condition usually indicative of mineral wealth, viz.: near the junction of crystalline and sedimentary formations. Passing from this region over Smoky Ridge into Western North Carolina, the crystalline rocks (chiefly gneissoid, micaceous and hornblendic in character), predominate; and it is only when we reach the southern portion of this western end of the State that the meta-

metamorphic rocks show themselves in a limestone so susceptible of a polish and so destitute of all organisms as to constitute a true statuary marble.

Thus, in the regions I was called upon to examine, there was theoretical probability of metaliferous veins, and the report of Prof. Kerr (appointed State Geologist of North Carolina since the death of Dr. Emmons), goes to show that the theoretical indications are realized by "the great gold-belt deposits of the Blue Ridge, the copper-belt of Jackson and Macon, the iron ore region of Madison and Haywood counties, and the beautiful marble of Nantehala."

From the time I left Tazewell, in East Tennessee, after being as far south as South Carolina and Georgia, I did not see a single fossil in place until I again returned to Tazewell. The crystalline rocks are mainly gneiss, often syenitic, the hornblende replacing the mica; the metamorphic strata are mica slate, sometimes talcose, hornblende slate, clay slate and metamorphic limestone. There is usually a deficiency of felspar and a predominance of hornblendic minerals, as actinolite, pargasite and asbestos; also, anhydrous silicates of alumina, as kyanite, staurotide, garnets and mica; of silicious minerals, quartz in every variety (sometimes decomposed), and of the magnesian minerals, talc or steatite locally in abundance.

From this statement it will be seen that the mines and lands, described in detail in this report are, as already stated, mainly located near the junction of crystalline and metamorphic rocks. Some of these lands are also directly in the line of strike from the Ducktown copper mines, giving additional probability to the finding of metallic wealth in such localities. It is a matter of note, too, that all the productive leads run nearly parallel to the main trend or direction of the mountain range, namely: sometimes N. N. E. and S. S. W., at others E. N. E. and W. S. W.

Several noted copper mines in Jackson county were worked somewhat extensively before the war, chiefly under the direction of a gentleman of experience, Mr. D. D. Davis, living near Webster, namely, the Cullowhee and Way-ye-hutta mines. The "gossan," or surface indication, is, as at Ducktown, an iron ore, but on penetrating beneath this, the proportionate quantity of copper ore gradually increases. At Way-ye-hutta the ore is mainly either the bi-sulphuret of copper, or the green carbonate (malachite), with some blue carbonate of copper (azurite). I saw, also, a box full of fine specimens, rich in copper, from the Savannah mines, in the same county. The bearing was taken at the above mines, and several leased localities, hereafter spoken

of in detail, were found to be in the prolongation of the vein, and at but few miles distance from one or the other of the above mines. The so called "gossan" at these localities seemed to be of the same character as at the "mines," rendering the development of copper, at greater depths, highly probable.

II. THE AGRICULTURAL ADVANTAGES.

Before visiting North Carolina, I had the general impression that the lands were unproductive, or, at least, that fertility was the exception and was confined to the valleys. But I found this was an entirely erroneous impression. Many of the hill-sides are under cultivation and produce excellent crops, and I have seen corn in some of the "coves" (terminations of valleys of elevation on the mountain sides), that would be considered more than an average crop, even in rich river bottoms. It is true, wheat, at some elevations, is not quite so productive as in the valleys, but oats are excellent, rye peculiarly good, and Irish potatoes as fine as I ever saw anywhere.

The grazing is, however, the most attractive feature in this farming district, partly because it is sometimes not so easy, as in more densely settled regions, to get crops of grain to market, but chiefly because mountains, at that elevation, arrest passing clouds and condense them into rain; consequently, showers are of such frequent occurrence as to keep the grass from scorching or drying up. I saw cattle, mules, sheep and some horses grazing on these mountain pastures and appearing in remarkably good condition. Residents inform me that, except when the snow is deep or remains long (circumstances of very rare occurrence), the mountain herbage and winter fern made into hay, will keep stock always the greater portion of winter, and sometimes the whole season through, without other feed.

The extent and quality of the orchards in the regions visited also surprised me. The apple trees were loaded with fruit of the early and late varieties. Peaches do not succeed so well. Plums I saw in abundance at a few farms, and also cherries. Part of the country examined was near the native home of the Catawba grape, and in the woods I saw luxuriant vines of several varieties, the Muscadine, Fox, &c. Berries grow most profusely—blackberries, dewberries, wild gooseberries, and, in places, even cranberries. I saw on the mountains the greatest abundance of fine whortleberries, or huckleberries, both of the large and small varieties.

Most of the gardens connected with the mountain farms exhibited a fine growth of cabbages and snap or bunch beans, and I

should judge that almost every vegetable would do well which flourishes in a moist and temperate climate.

Before closing the subject of fruit and vegetables, I may remark that I had the pleasure of visiting Mr. Silas McDowell, near Franklin, Macon county, and of hearing him read his communication to an Eastern journal on the "Thermal Belt for Fruit." He has observed that there is a stratum of air at about three hundred feet above every valley examined (and extending upward three or four hundred feet above its point of commencement), warmer than there is either at any point lower in the valley or higher in the mountain than the belt designated. The Secretary of the Smithsonian Institute (Prof. Henry) has been corresponding with Mr. Silas McDowell on the subject, and promises to give to the public a detailed notice of the observations made. If this prove true of all localities, fruit in these mountain regions could be cultivated at such an elevation as to render it a never failing crop, and a source of health, comfort and profit.

From some cause or other, bees seem to thrive remarkably well and to be great favorites in this part of North Carolina. We saw at one farm about seventy-five stand, and heard of one farmer who owned over a hundred bee-hives, or bee-gums, as the hive is usually part of a hollow tree.

It will be seen, from the above statements, that the grazing lands offered in large bodies to actual settlers or to capitalists, possess most of the advantages which are desired by farmers, particularly stock raisers, and I should suppose would be especially adapted as the residence or selection of emigrants from European mountainous regions, such as Scotland, Switzerland, parts of Germany, Sweden and Norway.

Gen. Clingman, well known as a man of science, has given his views of this region from long experience. They are embodied in a letter copied by the *Ashville (N. C.) News*, of July 25, 1867, from a pamphlet published at New York by the "American Agricultural and Mineral Land Company." The assurance to immigrants of a hearty welcome and protection from the Governor of the State is also subjoined to the document.

NEW YORK, June 12, 1867.

To Wm. Frazier, Esq., President of the American Agricultural and Mineral Land Company, New York:

DEAR SIR: The short period during which I expect to remain in this city, and the pressure of business engagements, will prevent my replying at length to your inquiries in relation to the western part of North Carolina.

For a great many years I have resided on the west side of the Blue Ridge, the range of mountains which divides the waters falling into the Atlantic

from those descending to the Mississippi River. Having for more than sixteen years been a Representative or Senator in Congress from that region, I used in my canvasses to visit every part of it. I have also ascended the principal mountains for the purpose of measuring or observing them, while my fondness for geology and mineralogy has carried me into almost every valley. My general acquaintance, therefore, with this entire region, probably exceeds that of any other person.

It may be regarded as an elevated table-land of more than two hundred miles in length, with an average breadth of fifty miles, and is crossed in different directions by many mountain chains. The height of the lower valleys may be stated as ranging from two thousand to twenty-five hundred feet above the level of the sea, while the principal mountain chains rise four thousand feet higher. This elevation, notwithstanding its southern latitude, gives it a delightful summer climate.

Mr. Wm. McDowell, who made observations for the Smithsonian Institute, at Asheville, for several years, informed me that the thermometer during the warmest summer weather did not rise above eighty-two degrees Fahrenheit. Even the climate of Switzerland is not equal to that of this region; not only at Geneva, but in the high valley of Chamouny, I once found hotter weather than I ever experienced in this section; while there, one is occasionally chilled in mid-summer by cold blasts from the masses of snow on the higher Alps. In western North Carolina, none of the mountains are high enough to bear snow in summer, yet the region is sufficiently elevated to afford a climate which is cool, dry, bracing and exceedingly exhilarating. No country is more healthy, being alike free from the diseases of miasmatic regions, as well as those common in rigorous or damp climates.

What especially distinguishes this section from all other mountain regions that I have seen, is the general fertility of its soil. This is true not only with reference to its valleys, but also of its mountains. Their sides and even tops are generally covered with a thick vegetable mould, on which the largest trees and grasses grow luxuriantly. At an elevation of five thousand feet above the ocean, the grasses and weeds are so rank as to remind one of the swampy lands of the lower regions. On the tops, and for a considerable distance down the sides of the higher chains, there are several varieties of evergreen or "winter grass," as they are generally called there. These are so nutritious that cattle are kept in good condition on them all the winter. A friend of mine before the war kept four or five hundred horned cattle on one of these mountains, and with the exception that they were supplied with salt occasionally, they subsisted entirely, both in summer and winter, on those grasses. The older cattle, he assured me, soon learned to understand the effect of the seasons, and without being driven, they led the herds, in the spring, down the sides of the mountains to obtain the young grasses that came up with the warm weather, and when these were destroyed by the autumn frosts they returned to the tops to get the evergreen vegetation, and found shelter under the spreading branches of the balsam fir trees in stormy weather. I have seen in Haywood county a five year old horse that was said to have been foaled and reared entirely on the top of Balsam Mountain, and was then for the first time brought down to see cultivated land and eat food grown by the hand of man.

Those portions of the mountain that are without timber are, of course, covered by the thickest coats of grass. The balsam trees which cover for so great an extent the Great Smoky, Balsam, and Black Mountains, could be easily

gotten rid of at a cost of not more than a couple of dollars per acre. It is so soft as to be easily cut, and if felled and suffered to lie a few months, its leaves would become quite dry, and it might be burned with the greatest facility. When thus destroyed, it would not spring up again, but in its stead a very thick sward of evergreen grass. Immense winter pastures could in this way be prepared, and thousands of cattle thus sustained in the winter, with only an occasional supply of salt.

Where the lands in this part of the State are placed under proper cultivation, they produce abundantly. On choice spots, more than one hundred bushels to the acre of Indian corn has frequently been obtained, and this valuable grain is everywhere produced in sufficient quantity. Wheat, also, does well, while oats, rye and barley are particularly good. It is especially suited to the production of grasses, timothy, orchard and herds grass, or red top being usually preferred. Clover and blue grass grow well, but are not so good as in some counties having more lime in the soil. Last summer I went with Mr. N. W. Woodfin over a mountain farm of his; the land of which had originally cost him less than one dollar per acre. It had been cleared by cutting out the undergrowth, and girdling the large timber so as to deaden it, and then put in grass, nearly twenty years previously. It was covered over with a thick growth of timothy and orchard grass, much of which appeared as thick and as tall as a fair wheat field. In some places we found both of these grasses rising high enough, as we sat on our horses, for us to take the top of the stalks growing on each side, and cause them to meet above the withers of our horses. I never, in fact, saw better grass anywhere than grew generally over this entire tract of twelve hundred acres.

Irish potatoes, cabbages and turnips are grown in the greatest quantities, while no country excels this for fruits. Its apples, both in size and flavor, excel those that I have seen in any other part of the world; while peaches, pears and grapes grow abundantly. Besides the Catawba, there are a great many other native grapes. One gentleman thinks he has obtained a hundred varieties of native grapes, some of which he considers superior to the Catawba. That this country is admirably adapted to the production of grapes and wine there can be no question. The fact that varieties of grapes can be selected, that ripen at different periods of the autumn, will make the vintage longer than it is in Europe, and thus increase the amount of wine made. All kinds of live stock thrive in the country, though horses and horned cattle have been more generally raised, because they require less care from the farmer. Sheep are very healthy, and grow well everywhere. As large sheep as I ever saw were some that were suffered to run in the woods, both in summer and winter, without being fed. Mr. Woodfin also stated to me, that he could, from the stock of his farm above alluded to, at all periods of the winter obtain good mutton and beef from the animals that were subsisted on the grass. Even when sheep are to be kept in large numbers, it is certain that they would do with half the feeding they require during the long winters in New England. Snow seldom remains many days at a time, even on the mountain tops in North Carolina; and when the grass is good, little is required in the form of hay or other food for the stock.

The minerals of this region have hitherto been turned to very little account. There are some narrow belts of marble and lime-stone which furnish a sufficiency of lime for use, and from which good marble can be procured at certain points. The different ores of iron, of the best qualities, exist in great abundance in many places, and from them superior iron can be made. Large and promising veins of copper have been cut in several localities in Jackson

county, and surface indications leave little doubt but that similar deposits will be found in other counties. Gold has been profitably mined in the counties of Jackson, Macon and Cherokee, but less extensively than in the section east of the Blue Ridge. It is quite probable that good veins of this metal will, in time, be opened, and there is encouragement to search for lead and silver at several points. The barytes and chrome ores can be brought into use when the railroads are finished that have been provided for by the State. Though coal does not exist, its want will not be experienced for a long period, as the immense forests will supply fuel for a great number of years, and long before they can become exhausted, railroads will permeate all parts of the district, and will bring in supplies of this valuable mineral from localities not far distant.

The country is everywhere intersected by bold and rapid streams, and the supply therefore, of water power, is beyond any demand that can ever exist for it. These streams, from the elevated valleys in which they are first collected, have a descent of not less than one thousand feet before they escape into the State of Tennessee, and present at various points therefore, rapids and falls where the water can be conveniently used for manufacturing purposes.

Though this region lacks the boldness and grandeur of the Alps, this deficiency is more than balanced by the fact that every part of it is susceptible of settlement and cultivation. The fact that the mountains as well as the valleys are covered by a luxuriant vegetation, gives to them a green and inviting appearance which renders many of the scenes peculiarly attractive to the beholder. The present population, though sparse, is quiet, industrious, intelligent and moral; the negroes there not being numerous enough to constitute an important element in the whole society. I know of no country more inviting to industrious emigrants, when one considers its excellent climate, water and soil, its mining and manufacturing resources, and its cheap lands and good population.

Very truly yours,

T. L. CLINGMAN.

RALEIGH, N. C., May 28, 1867.

DEAR SIR:—Immigrants proposing to settle in North Carolina, may not only rely upon all the security to their persons and property which good laws, faithfully administered, can give, but our people will welcome them with hospitality and every kindness.

I am, very respectfully, your obedient servant,

JONATHAN WORTH,
Governor of North Carolina.

III. OF RAILROAD AND OTHER FACILITIES.

A portion of the fine grazing lands spoken of above, particularly the so-called Buttermilk land, and other table lands of the Blue Ridge, are in sight of Walhalla, although thirty or thirty-five miles distant. This town is a German settlement on a branch of the Greenville and Columbia branch of the South Carolina railroad, in a few years to be completed to Knoxville, Tennessee. A good turnpike, well graded and regularly worked, passes over the Blue Ridge, and is much traveled by wagons conveying produce to this terminus and bringing goods back, so that even at

present the outlet is as good as in many thickly settled portions of our Western States. But the contemplated railroad north from this point passes through portions of the table lands described, and none would be more than a few miles distant when that railroad is completed.

To facilitate the understanding of these railroad facilities and market outlets, it may be advantageous here to mention briefly the roads already in operation and likewise those in progress. There is one railroad (the Atlantic and North Carolina railroad), running nearly east and west, all through the State of North Carolina, beginning at Morehead City, on the Atlantic; running thence through Newbern and Raleigh, the capital, to Salisbury; thence branching to Morgantown is to pass through Ashville (all but eighteen miles of this last piece is graded); thence through Waynesville, Webster, Red Marble Gap and Murphy to Ducktown, Tennessee. This railroad would pass close to many of the mining regions spoken of in this report.

Another continuous railroad, called the South Carolina railroad (already alluded to as being near and designed to pass through the Blue Ridge table lands), commences near the ocean at Charleston, South Carolina, and keeps a northerly direction through Columbia, and there branching to form the Greenville and Columbia railroad, terminates at present by one branch at Greenville and by another at Walhalla, but in a few years is expected to be completed to Knoxville, Tennessee. The Greenville branch of this Charleston railroad is expected to pass by Ashville and, crossing the Knoxville railroad at or near Morristown, is to continue to Cumberland Gap, thus meeting the Louisville and Lebanon branch of the Nashville railroad, which is in progress between Crab Orchard, Mt. Vernon and London, Kentucky.

Thus the outlet, even for grain, is good to the Eastern and Southern markets, while for cattle or mules, either shipped on railroads or driven along main routes, a market can readily be had; or, if preferred, farmers can remain and sell their stock at home, as buyers are constantly passing along and making up droves.

IV. OF THE HEALTH, CLIMATE, TIMBER, WATER, WATER PRIVILEGES, AND MISCELLANEOUS CHARACTERISTICS OF THESE REGIONS.

One of the greatest advantages to be secured in any region is health. Judging from what I saw, heard, and experienced, I should consider this portion of North Carolina pre-eminently favored in this point of view. The chief diseases which prevail, and they are rare, are usually the result of undue exposure in

winter, or of neglect in securing suitable diet. The average longevity of the citizens of this State has frequently been noticed as being remarkably high, and my own observation confirmed the statements I had seen and heard. There are no miasmatic diseases; chill and fever are unknown, physicians have but little to do, and drugs are scarce. During over six weeks of constant riding, I was frequently overtaken by rain, and had seldom an opportunity of getting my clothing thoroughly dry, yet I never caught cold or experienced any disadvantage to health; hence, I feel bound to believe that the climate is healthy. Most persons (judging from the latitude, which is about 35 deg. north), would expect to find this part of the United States uncomfortably warm, and foreigners from cool regions might hence be deterred from selecting this State; but, from my experience, I should say, they need have no apprehensions, for during the months of July and August, 1867, most of which I spent in the mountains of Western North Carolina, I never suffered from heat at all, unless I was exposed to the sun, sleeping always under a blanket; and, even when in the sun, seldom experiencing discomfort, because there was usually a fine mountain breeze.

The water is almost invariably soft, or what they term freestone water, suitable for washing clothing at every stream.

The rivers have such a rapid descent and so many falls, that water privileges are unbounded; and cheap mills are found every few miles. The owner of one assured me that the mill-building (a cabin), wheel, run of stones (granite obtained close by), and every thing included, ready to grind for custom, had only cost him sixteen dollars, besides two or three weeks of his own labor.

On many of the mountain sides there is as fine timber as could be desired, and very little undergrowth. In some regions there are several species of pine and spruce, although these by no means predominate. The poplar, or tulip tree, is found of as large size as in Indiana, besides hickory, ash, black and white walnut, beech, elm, dogwood, gum, and most of our Western common trees; also, the large magnolia (*M. grandiflora*), the long leaved cucumber tree (*magnolia auriculata*), chestnut white oak (*quercus pinus palustris*), alder (*alnus serrulata*), red birch (*betula rubra*), American holly (*ilex opaca*), chincapin (*castanea pumila*), American chestnut (*castanea vesca*), American hornbeam (*carpinus Virginiana*), downy lime tree (*tilia pubescens*), and hemlock spruce (*abies Canadensis*).

Many valuable medicinal plants are found, some in the mountains, as ginseng (*Arabia quinquefolia*), gentian (*G. quinqueflora*) rattle weed or black snakeroot (*cimicifuga racemosa*),

white snakeroot (*eupatorium ageratooides*), spikenard (*Azalia racemosa*), and other interesting flowers, which are occasionally cultivated in our gardens, as ladies' slipper (*cypripedium acaule* and *parviflorum*), Turk's cap lily (*lilium superbum*), wild indigo (*baptisia tinctoria*), and others, lower down or in the valleys, as mountain laurel (*kalmia latifolia*), and dwarf rose bay (*rhododendrum maximum*), water hemlock (*cicuta maculata*), elecampane (*inula helenium*), May apple (*podophyllum peltatum*), immense areas of passion flower (*passiflora incarnata*), Indian tobacco (*lobelia inflata*), Indian physic (*gillenia trifoliata*), squaw root (*conopholis Americana*), besides a variety of other plants, the botanical names of which I did not know. Dr. Curtis, I learn, published at Raleigh, in 1860, a work on the woody plants of North Carolina, but I was unable to obtain a copy for reference before closing this report.

In enumerating the characteristics of this region as indicating the requisites for a healthful, agreeable residence, it may not be amiss to call attention to the fact that I never felt a mosquito bite all the time I was out, and observed the residents never use or require mosquito bars. The only disagreeable animals that are more numerous than now in the Middle or Western States are some two or three species of poisonous snakes, which are rather abundant in some rocky and mountainous regions; yet I saw fewer than I expected, and heard of but few cases in which serious accidents had occurred. The citizens of that region use the white snake root as a cure for the virus. The settlement of the country and the introduction of hogs would soon rid this portion of North Carolina of poisonous snakes. There are a few bears and wildcats in portions of the mountains, but they are not at all troublesome; deer are tolerably abundant, as well as smaller game.

The only objection which I ever heard urged against parts of North Carolina was the so-called "milk sickness," which affects cattle and the milch cows at certain seasons; but this does not exist at all any where near these fine table lands of the Blue Ridge, regarding which I have been speaking; and in those other counties, where it does occasionally exist, it can be eradicated by cultivation; besides, it is found locally through portions of all the Western States, Missouri, Kentucky, Ohio, Indiana, and in Illinois abundantly.

V. DETAILS REGARDING THE LANDS EXAMINED.

1. *Blue Ridge Property on Whiteside and Black Rock, owned by Messrs. Jennings, Ammen & Co., and by Messrs. A. L. and A. J. Herren & Co.*

The remarks on this land will apply to nearly the whole of a 40,000 acre tract, including the property of Messrs. Jennings & Co., on the Sugartown Fork of the Tennessee river; also the Buttermilk Level Lands and those in the Horse Cove, besides 1,920 acres owned by Messrs. Herren & Co., on and near Whiteside Mountain; also 50 and 134 acres in Casher's Valley, and finally 640 acres on Black Rock Mountain.

This whole property is very favorably situated. Most of the land is level and fertile, suitable for small grain and roots, excellent for pasturage in a very healthy region, with plenty of soft water, only thirty or thirty-five miles from the South Carolina Railroad, which is expected shortly to be continued through them. A good turnpike, meantime, leads through a portion of the property, and not far from any of it.

Much gold has been washed in the valleys connected with part of it, and the precious metal is no doubt derived from the quartz veins which show themselves on Whiteside Mountains, and probably also from Black Rock and Fodder Stack, not far from the South Carolina and Georgia corner. The deposit of gold extends into those States also. The nearest point on the railroad alluded to is Walhalla, a German settlement in South Carolina, and Greenville, on the other branch, is but a little farther. The town of Walhalla can be distinctly seen, in a clear day, from Whiteside Mountain; indeed there is a prospect all around, to at least double that distance, or about sixty miles, where other ranges of mountains show themselves. The whole view is as fine as any I ever recollect seeing, except perhaps in Switzerland; even finer, I think, than from the Catskill Mountains, or from the Rocky Mountains in New Mexico, or from the Sierra Madre, near Monterey, in Mexico. By deviating a short distance from the turnpike two very fine waterfalls can be seen on the Sugartown Fork of the Tennessee river; and in Georgia, at about forty miles' distance, are others, said to be even finer.

Thus all the advantages necessary to render this a desirable tract for a colony, or settlement, by persons desiring to form their own society, seem here combined. The only drawbacks, at present, are want of society, schools and churches. But such a colony as ought to settle here would soon bring those advantages near enough to each family.

For those who prefer mining, there are very promising indications on the Whiteside Mountain, where the Indians are reported to have had a silver mine. It is only about thirty years since the Indians left that region. The property is chiefly in Macon county, of which Franklin is the capital, partly in Jackson county, with Webster as the county seat. The title to it is in fee simple.

2. *Property on Standing Indian.*

Besides this tract owned by Messrs. Herren & Co., there will be included, under this head, land on Nantehala river, about six hundred and forty acres on Alarka, one thousand and eight hundred to two thousand acres on Cown Mountain and Creek; besides three hundred acres on Silver Creek, the property of Mr. J. R. Ammen, and about two thousand acres belonging to Messrs. Ammen, Higdan, Bryson & Co., on the head of Alarka. The above tracts are mainly in the western part of Macon county, and are held in fee simple. This property is in some respects similar in character to the lands first described in detail. Here too there is a fair prospect of metalliferous wealth, as the Savannah mines, which have afforded a rich copper ore, are at a short distance from that part called the Beasley land, on Cown Creek; and the vein from that mine evidently trends toward the property. When the Knoxville branch of the Greenville & Columbia Railroad is completed, these lands will be partly on the line and partly a few miles from railroad facilities. Undoubtedly when that period arrives, not only the marble quarries, but also the soapstone, will be mined extensively and profitably.

3. *Maddron Mines, &c.*

This subdivision will give some details regarding the hundred acres leased by Messrs. Maddron & Co., from Mr. Samuel McGaha, for ninety-nine years; and also furnish some account of the Wilkin's Creek property, held in fee simple by the "Merry Crew Company" (Messrs. McCracken, Ferguson & Co.), besides speaking of the lease from Mr. Brown, on the Fine's Creek property, and of two from the Messrs. Rathbone. Also of the explorations about Mr. Cyrus Rogers' place, on Rush Fork of Crab Tree; likewise the examinations on Mr. Frank Worley's farm on Sandy Mush, Madison county, and some on Mr. Wm. Liner's, not far from Waynesville. These lands are situated chiefly in Haywood, although partly in Madison and Buncombe counties, and are not especially recommended as level, arable lands, but rather for the prospects of developing mineral wealth, as on nearly all these remarkably fine magnetic iron ore is found, which, on analysis made by Mr. Cox, afforded the following:

Sesqui-oxide of Iron (giving pure iron 60.76).....	86.80
Tungstic acid.....	.40
Titanic acid.....	.15
Lime, magnesia and alkalis.....	1.80
Insoluble silicates.....	8.80
Water and loss.....	2.05
	<hr/>
	100.00

Specific gravity 4.9.

This ore contains nothing injurious, and is rich in iron of a quality valuable for the manufacture of steel on the new process, in consequence of the presence of tungstic acid.

At the Maddron mine, in Haywood county, N. C., the gossan is promising, but the work has not been carried far enough to test, certainly, the presence of copper or silver in workable quantities. A mineral is found there abundantly, which is a variety of rutile called nigrine, a titanic mineral employed in painting on porcelain, and for giving the requisite color to artificial teeth. Another mineral found here is a species of emerylite, and may lead to the discovery of emery.

4. *Punch Bowl Mine and Other Localities.*

In Cocke county, Tenn., there has been a considerable amount of prospecting done by Messrs. Stokely, Ellison & Co., and the Punch Bowl locality, besides being theoretically promising, has furnished some ore that I was very desirous to analyze; but unfortunately the package sent never reached Morristown. The decomposing rock on the lands of Sexton, Parker and others, in the same county, afforded Mr. Cox on analysis:

Loss by ignition to a bright red heat (water)....	14.3
Silica	44.2
Alumina ..	42.0
Lime, magnesia and protoxide of iron.....	a trace
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	100.5

This mineral is hard, compact and greasy to the touch, before being crushed; gives then a white powder free from grit. It promises, from all this evidence, to be valuable as a porcelain clay, and will be found, from an examination of Dana's mineralogy, to differ but little from the porcelain clay of Cornwall and other European localities. The same may be said of a locality on the North Carolina side of this Walnut mountain (part of Great Smoky), not far from Mr. Felmet's, on Tines creek, Buncombe county, where we also found wolfram, or tungstate of iron. The decomposing rock gave, on analysis:

Silica	47.2
Alumina ..	36.0
Lime, magnesia and iron.....	a trace
Water	16.8
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	100.0

This kaolin was cream colored and soft.

Under this head may be mentioned also another similar sample of decomposing rock, forming a porcelain clay, near the farm of Mr. Dean, and not far from the "Shallow Ford" of the Tennessee river, where we saw specimens of graphite interspersed through the rock. Future developments may exhibit this graphite, or plumbago, in larger quantities.

VI. SUMMARY, OR SYNOPSIS OF CONCLUSIONS.

From the above facts it will be seen that the mining prospects are good on many tracts examined; that most excellent iron can be manufactured from the magnetic iron ore, the iron rendered more valuable by the presence of tungsten. That gold may be profitably washed from deposits in Horse Cove, Casher's Valley and elsewhere in that region; and that there is a fair prospect of tracing these deposits to their quartz matrix, in Whiteside and other mountains close by, thus making gold washing more profitable by employing crushers, &c. Further, that porcelain clay is found in considerable and paying quantities in Cocke county, Tenn., and in Macon and Buncombe counties, N. C. Also that copper may very probably be worked to advantage in those leases in Macon and Jackson, which are near the Cullowhee, Wayyehutta and Savanna mines. And lastly, that when the projected railroads are completed the prospects will be good for the opening of marble and steatite quarries.

As regards the agricultural facilities, I think it would be difficult to find a region which combines more advantages than are to be realized in the Blue Ridge tracts—pure water, extensive grazing range, proximity to market, and fine scenery. But above all, the paramount consideration of a remarkably healthful and agreeable climate, uniting the advantage of short winters, such as exist in latitude thirty-five degrees north, with the temperate summers found at an altitude of three thousand to three thousand five hundred feet above the ocean.

In view of these considerations, it seems as if it would be difficult for immigrants to select a locality combining more advantages. Without any disparagement to some of our new Northwestern States, it may be admissible to mention their very long and dreary winters; in others, further west and in the extreme south, occasional parching droughts, which defeat the whole labor of the husbandman, and entirely disappoint him regarding his prospects with stock, while other rich bottom lands, well repaying his labor, leave him no health to enjoy his ample profits, each autumn breaking down his strength with miasmatic remit-

tents and intermittents. In addition to the above considerations, we must add the fact, that most of the regions considered favorable to the settler, as regards the accumulation of wealth, are already out of the reach of many purchasers, being held by speculators at from two to ten dollars, even in remote regions. But the lands of North Carolina can be sold in large tracts to colonists or capitalists for from one to two dollars.

It would seem, under these circumstances, that the facts had but to be brought before the community, desiring to emigrate from densely populated portions of the Eastern Continent, (where after a long life-time of hard work, they cannot hope to be land owners,) in order to show them at once the prospects of their being landed proprietors of extensive farms in a healthy region, on a free soil, and amid a social, intelligent people.

More than this surely cannot be asked or expected by enlightened searchers after new and happy homes.

A little management and combination of effort on the part of Colonists, will enable them to charter seaworthy vessels at the nearest ports, and to land at Charleston, South Carolina, (best, if practicable, in the months of May or June,) whence they can readily reach the tracts indicated, by about 250 to 300 miles of railroad travel. The expense on these railroads is, for first class fare, about five cents; second class, three cents per mile; therefore, for this route, from ten to fifteen dollars, besides provisions for two days, and then thirty miles' travel by wagon. At the present rates of second-class fare in merchant vessels, it is confidently believed that emigrants might travel two or three hundred miles in their own country, buy provisions and bedding for the voyage, pay their ship's fare, and make the three hundred miles on this continent comfortably, for an average of \$100 currency per head, certainly for £20 sterling in gold or silver, or twenty Napoleons, or about two hundred and fifty florins of forty-four cents each. I have conversed with those who came comfortably from Germany in Bremen vessels, as second class passengers. Everything (viz., bedding and provisions) is furnished for one hundred and five florins, thus rendering my estimate above, of \$100 for the whole journey, a very safe calculation.

Consider now a family of five coming out, say from Switzerland, to North Carolina, for \$500 in gold, and purchasing one hundred and sixty acres of land for \$200, and buying a horse and implements for \$300 more, how are they situated? An entire family is removed from an overcrowded region and quietly settled, in six weeks, on a good farm, where, if the head of the family has not already a good house and land enough cleared, that

is soon effected with industry, if he has reared enough to buy winter food and bought a fair stock of clothing. In this manner, for an expenditure of \$1,000 in gold, or 2,500 florins, a good sized family may be ever afterward independent land owners; and, as the sons grow up, more land can be purchased in the same neighborhood.

These seem to me important facts; and, as I have lived over thirty-nine years in the country, and traveled from the Atlantic to Arizona, from Canada to Mexico, and examined twenty-eight States in the Union, beside having resided three years in Switzerland, thirteen in Scotland, and traveled in France and Germany, I may, perhaps, be justified in thus forming and expressing an opinion. In taking so important a step, however, as the emigrant does, it is well for him to inquire of many who are familiar with the country; or, if a sufficient colony desires to remove, one or more might be sent in advance to examine. In doing so, the above salubrious portions of Western North Carolina should not be overlooked.

Those desiring to buy land can address Col. J. G. EVE, Barbourville, Kentucky, to whom this report is made, and he will promptly respond.

NOTE.—Since the above report was made the following additional facts have been obtained, regarding railroads:

The Western N. C. R. R. has had appropriated to it, by the State, from Morgantown via Ashville to Paint Rock, (the State line) in the direction of Morristown and Ducktown, Tennessee, \$10,000,000.00. This last road runs via Waynesville, Webster, Red Marble Gap and Murphy. They have the survey and location nearly completed, and expect to have the road completed by the close of 1870.

At a meeting held in Franklin, North Carolina, by those interested in the Blue Ridge road, running from Knoxville *via* Maryville, Tenn., up Tennessee river *via* Rabera Gap to Walhalla, the President of the South Carolina portion was present, and a consolidation with the northern portion was spoken of. South Carolina appropriated \$1,500,000 to the road at the last session of the Legislature. They intend to let out the road to contract at once. R. O.

